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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,522

04/27/2006

Peter Hoghoj

7875-012

6829

20575

7590

08/04/2011

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EXAMINER

THROWER, LARRY W

ART UNIT

PAPER NUMBER

1742

NOTIFICATION DATE

DELIVERY MODE

08/04/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@techlaw.com

Office Action Summary	Application No. 10/577,522	Applicant(s) HOGHOJ ET AL.	
	Examiner LARRY THROWER	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-18 and 30-44 is/are pending in the application.
- 4a) Of the above claim(s) 42 and 43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-18,30-41 and 44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species A, claims 8-18, 30-41 and 44 in the reply filed on May 19, 2011 is acknowledged.
2. Claims 42-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 8, 12 and 30-37** are under 35 U.S.C. 103(a) as being unpatentable over Richards (US 5,855,966) in view of Economy et al. (US 4,515,828).
 - Regarding **claim 8**, Richards discloses a replication method for producing a smooth object having a low surface roughness (abstract). The method includes producing a replication master (10) by forming the master to have a desired external surface shape which at least partially corresponds to a counterform of a surface of an object to be produced by replication (col. 2, lines 36-45), treating the external surface of the master to obtain a predetermined surface roughness value (col. 2, lines 46-55), and coating at least a part of the master with a removable smoothing layer made of a

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soluble material having a flowability such that the top surface of the smoothening layer displays a smaller roughness than the surface on which it is formed (col. 2, line 56 - col. 3, line 11); coating at least a part of the master with an object material such that the surface of the object corresponds to a counterform of the master (col. 4, lines 33-38); and releasing the object from the master (col. 4, lines 33-38).

- Richards is silent as to the smoothening layer being made of a polymer. However, Economy et al. discloses a replication method for producing a smooth object having a low surface roughness (abstract), which includes producing a replication master by forming the master to have a desired external surface shape which at least partially corresponds to a counterform of a surface of an object to be produced by replication (col. 2, lines 60-66), and coating at least a part of the master with a smoothening layer made of a soluble polymer material having a flowability such that the top surface of the smoothening layer displays a smaller roughness than the surface on which it is formed (col. 2, lines 60-68); and coating at least a part of the master with an object material such that the surface of the object corresponds to a counterform of the master (col. 3, lines 1-9). As taught by Economy et al., coating the master with a smoothening layer made of a polymer effectively reduces the surface roughness of the master (col. 3, lines 15-36) and allows a variety of smooth objects to be produced (col. 3, lines 1-9). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the polymer of Economy et al. in the replication method of Richards for the surface roughness reduction effect, as taught by Economy et al.

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- Regarding **claim 12**, Richards discloses the object being an optical device (col. 4, lines 33-38).
- Regarding **claim 30**, Economy et al. discloses the smoothing layer being applied by spin coating the master with a liquid smoothing material and hardening the smoothing material (col. 3, lines 15-35).
- Regarding **claims 31-34**, Richards discloses coating a thin metallic layer on top of or under the smoothing layer (col. 4, lines 1-22).
- Regarding **claims 35-37**, Richards discloses the smoothing layer having a roughness of about 50 Angstroms, but is silent as to the roughness being 5 Angstroms or less or the thickness of the smoothing layer. However, absent evidence of unexpected results obtained from obtaining the claimed roughness, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have achieved a suitable surface roughness to effectively mold optical elements and allow a variety of smooth objects to be produced as taught by Economy et al. (col. 3, lines 1-9), the surface roughness and thickness being result effective variables routinely optimized by those of skill in the art, as recognized by Richards (col. 1, lines 33-42) and Economy et al. (col. 3, lines 30-36). The optimization of a range or other variable within the claims that flows from the “normal desire of scientists or artisans to improve upon what is already generally known” is *prima facie* obvious. *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003).

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5. **Claims 9-11, 15-18, 38-41 and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over Richards (US 5,855,966) in view of Economy et al. (US 4,515,828), as applied to claim 8 above, in view of Hallman et al. (US 5,505,808).

- Regarding **claim 9**, Richards is silent as to dissolving the smoothening layer or a release layer with a solvent. However, Hallman et al. discloses a method of releasing an object from a master which includes dissolving a releasing layer on top of the master with a solvent (col. 5, lines 9-21). As taught by Hallman et al., dissolving a releasing layer which holds an object to a master with a solvent effectively releases the object from the master. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have dissolved the smoothening or releasing layer of Richards with a solvent because, as taught by Hallman et al., this effectively releases the object from the master (col. 5, lines 9-21).
- Regarding **claims 10-11**, Hallman et al. discloses gluing an object support to an object, which inherently fills the gaps between the two (col. 4, line 63 - col. 5, line 8).
- Regarding **claims 15-17**, Hallman et al. discloses the object and glue including epoxy (col. 7, lines 35-54).
- Regarding **claim 18**, Hallman et al. discloses coating the master with a protection layer on top of the smoothening layer (col. 7, lines 35-54).
- Regarding **claims 38-39**, Hallman et al. discloses a method of releasing an object from a master which includes dissolving a releasing layer on top of the master with a solvent (col. 5, lines 9-21), and Richards discloses the smoothening layer remaining substantially intact.

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- Regarding **claim 40**, Hallman et al. discloses coating the master with a protection layer on top of the release layer before applying the object material (col. 5, lines 22-27).
- Regarding **claim 41**, Hallman et al. discloses the layer being soluble after being formed on the master and after being hardened (col. 5, lines 17-21).
- Regarding **claim 44**, Hallman et al. discloses forming a release layer on top of the master (col. 5, lines 9-17).

6. **Claims 13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Richards (US 5,855,966) in view of Economy et al. (US 4,515,828), as applied to claim 8 above, in view of Meeks (US 2002/0145740).

- Richards is silent as to characterizing the optical device by profilometry or reflectometry measurement. However, Meeks discloses a method of characterizing an optical device by profilometry (abstract). As taught by Meeks, characterizing a device by optical profilometry enables topographic and non-topographic defects to be detected (¶¶5 and 8). Thus, it would have been obvious to one of ordinary skill in the art to have measured the optical profile of the object produced in the method of Richards with the optical profilometer of Meeks in order to detect defects in the optical device to prevent failure of the optical device, as taught by Meeks (¶5).

Response to Arguments

7. Applicant's arguments filed May 19, 2011 have been fully considered but they are not persuasive.

- Applicant first argues that "Economy et al. does not teach or suggest a 'removable' smoothening layer made from a polymer material . . . because Economy et al.'s smoothening layer is first 'crosslinked by the application of further heat or radiation'." This argument has been considered but is not persuasive. Col, 2, lines 13-44 of Economy et al. discloses that a prepolymer material is formed on the master in the form of a solution. Thus, the material is soluble after being formed on the master, and "removable" by, e.g., simply wiping it off of the master prior to crosslinking it.
- Applicant further argues that the smoothening layer being dissolvable by a solvent is not taught in the cited art. This argument has been considered but is not persuasive. Hallman et al. discloses a method of releasing an object from a master which includes dissolving a smooth releasing layer on top of the master with a solvent (col. 5, lines 9-21). As taught by Hallman et al., dissolving a smooth releasing layer which holds an object to a master with a solvent effectively releases the object from the master. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have dissolved the smoothening or releasing layer of Richards with a solvent because, as taught by Hallman et al., this effectively releases the object from the master (col. 5, lines 9-21).
- Applicant further argues that Economy is not directed toward making an object to be produced by replication, but rather a smooth layer on a single object. This argument

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has been considered but is not persuasive. Independent claim 8 does not positively recite a step of replicating the production of a smooth object; the method as written merely requires each step to be performed a single time.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LARRY THROWER whose telephone number is (571)270-5517. The examiner can normally be reached on Monday through Friday from 9:30AM-6PM est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina A. Johnson can be reached on 571-272-1176. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Larry Thrower/
Examiner, Art Unit 1742

/Christina Johnson/

Supervisory Patent Examiner, Art Unit 1742